

CLAIMS

What is claimed is:

1. A footwear insole, said insole comprising:

a plurality of compressible protrusions; and

5 means for interconnecting said compressible protrusions, said interconnecting means being adapted to ensure strict compression of said compressible protrusions upon acceptance of a compressive force.

10 2. The insole according to Claim 1, wherein said protrusions present varying thicknesses of compressible material, wherein:

at least one thickness corresponds to a first stage of compression upon acceptance of a compressive force and;

15 at least one thickness corresponds to a second stage of compression upon acceptance of a compressive force, the second stage of compression initiating upon completion of the first stage of compression.

20 3. The insole according to Claim 2, wherein the first stage of compression corresponds to a first spring force and the second stage of compression corresponds to a second spring force, the second spring force including the first spring force and an augmenting spring force.

4. The insole according to Claim 3, wherein at least one thickness associated with said insole corresponds to a third stage of compression upon acceptance of a compressive force, the third stage of compression initiating upon completion of the second stage of compression.

5. The insole according to Claim 4, wherein the third stage of compression corresponds to a third compressive force, the third spring force including the second spring force and a second augmenting spring force.

6. The insole according to Claim 5, wherein:

said protrusions comprise a first set of protrusions and a second set of protrusions;

said interconnecting means comprises a base;

said first set of protrusions have the at least one thickness corresponding to the first stage of compression;

said second set of protrusions have the at least one thickness corresponding to the second stage of compression; and

said base has the at least one thickness corresponding to the third stage of compression.

7. The insole according to Claim 6, wherein said insole comprises a forward impact region and a rearward impact region, each of said forward and rearward impact regions including a plurality of said protrusions,

the plurality of protrusions in said rearward impact region presenting generally greater thicknesses than corresponding protrusions in said forward impact region.

8. The insole according to Claim 5, wherein:

5 said interconnecting means comprises a base and a plurality of interconnecting portions extending between said protrusions, said interconnecting portions being disposed on said base;

10 said protrusions have the at least one thickness corresponding to the first stage of compression;

 said interconnecting portions have the at least one thickness corresponding to the second stage of compression; and

15 said base has the at least one thickness corresponding to the third stage of compression.

9. The insole according to Claim 8, wherein:

 said protrusions each include a plateau and a peripheral edge;

20 the at least one thickness corresponding to the first stage of compression comprises varying thicknesses between said plateau and said peripheral edge.

10. The insole according to Claim 6, wherein:

said insole comprises a forward impact region and a rearward impact region;

each of said forward and rearward impact regions having a central area and a peripheral area;

5 each of said forward and rearward impact regions including a plurality of said protrusions;

10 in at least one of said forward and rearward impact regions, a plurality of protrusions in said central area being greater in areal extent than a plurality of said protrusions in said peripheral area.

15 11. The insole according to Claim 10, wherein, in both of said forward and rearward impact regions, a plurality of protrusions in said central area being greater in areal extent than a plurality of said protrusions in said peripheral area.

12. The insole according to Claim 1, wherein:

a first group of said protrusions is adapted to maximally absorb a compressive force along a first primary force vector; and

20 a second group of said protrusions is adapted to maximally absorb a compressive force along a second primary force vector.

25 13. The insole according to Claim 12, wherein a third group of said protrusions is adapted to maximally absorb a compressive force along a third primary force vector.

14. The insole according to Claim 13, wherein:

the first primary force vector is essentially parallel to a longitudinal axis of said insole;

the second primary force vector is oriented at an acute angle, and in a leftward and forward direction, with respect to the first primary force vector; and

the third primary force vector is oriented at an acute angle, and in a rightward and forward direction, with respect to the first primary force vector.

15. The insole according to Claim 14, wherein the second primary force vector is oriented at an angle of between about 30 degrees and about 45 degrees, and in a leftward and forward direction, with respect to the first primary force vector.

16. The insole according to Claim 14, wherein the third primary force vector is oriented at an angle of between about 30 degrees and about 45 degrees, and in a rightward and forward direction, with respect to the first primary force vector.

17. The insole according to Claim 13, wherein:

said insole comprises a forward impact region and a rearward impact region; and

said forward impact region comprises a plurality of said first group of protrusions, a plurality of said second group of protrusions and a plurality of said third group of protrusions.

18. The insole according to Claim 1, wherein said insole is formed from a gel material.

19. The insole according to Claim 18, wherein said gel material is styrene-based.

5 20. The insole according to Claim 18, wherein said gel material is polyurethane-based.

21. The insole according to Claim 18, wherein said gel material has a durometer measurement of between about 40 Shore 00 and about 65 Shore 00.

10 22. The insole according to Claim 21, wherein said gel material has a durometer measurement of about 55 Shore 00.

15 23. The insole according to Claim 1, wherein said protrusions are formed from different materials with different durometer measurements.

24. The insole according to Claim 1, further comprising an arch stiffener.

20 25. The insole according to Claim 24, wherein a remainder of said insole is formed from at least one material that is less stiff than said arch stiffener.

26. The insole according to Claim 1, wherein said insole is an element that is freely incorporable into footwear and freely removable therefrom.

27. The insole according to Claim 1, wherein said insole is sized to accommodate solely the heel area of a foot.

5 28. The insole according to Claim 1, wherein said insole is sized to accommodate solely the metatarsal area of a foot.